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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09-834,501	04/12/2001	Gerhard Schneider	5196-ETCH/CONE/JB1	5799

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APPLIED MATERIALS, INC.  
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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/834,501

Applicant(s)

SCHNEIDER ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 7 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 12-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., U.S. Patent 5,302,226.

Yamazaki et al. shows the invention as claimed including a chamber for processing an article 50-2, the chamber comprising: a chamber body having a bottom wall with a pumping port formed therein (see figs. 4 and 5); an article support 43, 73 disposed inside the chamber body and comprising an upper surface, and a lower surface facing the bottom wall; wherein the article support has a first width to support

the article on the upper surface; and a stem extending from the bottom wall of the chamber body to the lower surface of the articles support, the stem supporting the article support (see figs. 4 and 5); wherein the stem has a second width smaller than the first width (see figs. 4 and 5).

The article support is circular (see col. 5, line 50), having a center; the stem connects to the article support at a position offset from the center (see figs. 4 and 5); the pumping port is located completely beneath the article support (see figs. 4 and 5); the stem is adapted to couple RF energy to the article support and that alternatively DC potential may be used/supplied (see col. 7, lines 50-55). Furthermore, note that the apparatus of Yamazaki et al. further comprises internal cooling journals formed in the article support supplied with coolant via the stem (see col. 6, lines 51-55 and col. 7, lines 58-62).

Yamazaki et al. does not expressly disclose a plurality of stems, each plurality of stems supporting a respective one of a plurality of article supports. However, duplication of parts was held to have been obvious. *St. Regis Paper Co. v. Beemis Co. Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Yamazaki et al. as to further comprise plurality of stems supporting a plurality of article supports as claimed, because in such a way a plurality of articles can be processed at the same time and therefore the processing time is reduced and the throughput of the apparatus is increased.

With respect to claim 17, Yamazaki et al. does not expressly disclose that the stem connects to the article support at the center, however rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).

Claims 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., U.S. Patent 5,302,226 as applied to claims 12-13 and 16-17 above, and further in view of Turner et al., U.S. Patent 5,509,464.

Yamazaki et al. is applied as above but does not expressly disclose that the article support is supplied with helium gas via the stem. Turner et al. discloses an apparatus in which a coolant medium, such as helium, is supplied to the article support through the stem (see col. 4, lines 44-59). In view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Yamazaki et al. as to further supply helium gas to the article support in order to provide means for improving heat conduction from the substrate to the cooled pedestal.

Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., U.S. Patent 5,302,226 as applied to claims 12-13 and 16-17 above, and further in view of Cheng et al., U.S. Patent 5,304,248.

Yamazaki et al. is applied as above but does not expressly disclose that the stem of the apparatus further comprises bellows. Cheng et al. discloses an apparatus comprising a stem for supporting an article support 40 and comprising bellows 48

disposed between the article support and the bottom wall of the processing chamber (see col. 4, lines 29-35 and fig. 2). In view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Yamazaki et al. as to comprise a stem comprising bellows to permit vertical movement of the article support.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., U.S. Patent 5,302,226 as applied to claims 12-13 and 16-17 above, and further in view of the Admitted Prior Art.

Yamazaki et al. is applied as above but does not expressly disclose a partition extending from a top wall of the chamber body downward between the plural article supports. The admitted prior art discloses a processing chamber 12 having two processing regions 18 with a partition extending from a top wall of the chamber body downward between the plural article supports (see fig. 3 and its description). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Yamazaki et al. as to comprise the claimed partition structure in order to isolate the two processing regions. It would have been obvious to one of ordinary skill in the art at the time the invention was made that by isolating the two processing regions contamination between the processing regions can be reduced.

Claims 12, 15-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al., U.S. Patent 5,304,248.

Cheng et al. shows the invention as claimed including a chamber for processing an article 10, the chamber comprising: a chamber body having a bottom wall with a pumping port formed therein (see figs. 2 and 5); an article support 40 disposed inside the chamber body and comprising an upper surface 42, and a lower surface 41 facing the bottom wall; wherein the article support has a first width to support the article on the upper surface; and a stem extending from the bottom wall of the chamber body to the lower surface of the articles support, the stem supporting the article support (see figs. 2 and 5); wherein the stem has a second width smaller than the first width (see figs. 2 and 5).

The article support is circular (see col. 4, lines 21-22), having a center; the stem connects to the article support at a position offset from the center (see figs. 2 and 5); the stem of the apparatus of Cheng et al. comprises bellows 48 disposed between the article support and the bottom wall of the processing chamber (see col. 4, lines 29-35 and fig. 2).

Cheng et al. is applied as above but does not expressly disclose a plurality of stems, each plurality of stems supporting a respective one of a plurality of article supports. However, duplication of parts was held to have been obvious. *St. Regis Paper Co. v. Beemis Co. Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Cheng et al. as to

further comprise plurality of stems supporting a plurality of article supports as claimed, because in such a way a plurality of articles can be processed at the same time and therefore the processing time is reduced and the throughput of the apparatus is increased.

Regarding claim 17, Cheng et al. does not expressly disclose that the stem connects to the article support at the center, however rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al., U.S. Patent 5,304,248, as applied to claims 12, 15-17, and 19 above, and further in view of the Admitted Prior Art.

Cheng et al. is applied as above but does not expressly disclose a partition extending from a top wall of the chamber body downward between the plural article supports. The admitted prior art discloses a processing chamber 12 having two processing regions 18 with a partition extending from a top wall of the chamber body downward between the plural article supports (see fig. 3 and its description). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Cheng et al. as to comprise the claimed partition structure in order to isolate the two processing regions. It would have been obvious to one of ordinary skill in the art at the time the invention was made that by isolating the two processing regions contamination between the processing regions can be reduced.



Claims 12-13, 15-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aruga et al., EP 0 628 644 A2 in view of Hongoh et al., U.S. Patent 6,358,324 B1.

Aruga et al. shows the invention substantially as claimed including a chamber 31 for processing an article 35, the chamber comprising: an article support 39 disposed inside the chamber body and comprising an upper surface, and a lower surface facing the bottom wall; wherein the article support has a first width to support the article on the upper surface; and a stem extending from the bottom wall of the chamber body to the lower surface of the articles support, the stem supporting the article support (see fig. 6 and the abstract); wherein the stem has a second width smaller than the first width and wherein the stem connects to the article support at the center (see fig. 6 ad its description).

Aruga et al. does not expressly disclose that the pumping port is formed in the bottom wall of the chamber. Hongoh et al. discloses a plasma apparatus in which a stem is use for supporting the substrate support and in which the pumping port is located in the bottom wall of the chamber and beneath the article support in order to evacuate the entire process chamber uniformly and maintained a uniform plasma density in the process chamber (see fig. 2 and col. 7, lines 22-30). Therefore, in view of this disclosure it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Aruga et al. as to locate the pumping port in the bottom wall of the process chamber in order to evacuate the entire

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process chamber uniformly and maintained a uniform plasma density in the process chamber. With respect to claims 15 and 19, note that the Aruga et al. apparatus further comprises bellows 37 (see fig. 6). Also, note that the stem is adapted to couple RF energy from RF power source 75 to the article support through line 87 (see figs. 1 and 6, and their descriptions).

Aruga et al. and Hongoh et al. are applied as above but do not expressly disclose a plurality of stems, each plurality of stems supporting a respective one of a plurality of article supports. However, duplication of parts was held to have been obvious. *St. Regis Paper Co. v. Beemis Co. Inc.* 193 USPQ 8, 11 (1977); *In re Harza* 124 USPQ 378 (CCPA 1960). Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Aruga et al. modified by Hongoh et al. as to further comprise plurality of stems supporting a plurality of article supports as claimed, because in such a way a plurality of articles can be processed at the same time and therefore the processing time is reduce and the throughput of the apparatus is increase. Furthermore, regarding claims 4-5, Aruga et al. and Hongoh et al. do not expressly disclose that the stem connects to the article support at a position offset from the center, however rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).

Claims 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aruga et al., EP 0 628 644 A2 in view of Hongoh et al., U.S. Patent 6,358,324 B1

as applied to claims 12-13, 15-17 and 19 above, and further in view of Turner et al., U.S. Patent 5,509,464 and Yamazaki et al., U.S. Patent 5,302,226.

Aruga et al. and Hongoh et al. are applied as above but do not expressly disclose that the article support is supplied with helium gas via the stem. Turner et al. discloses an apparatus in which a coolant medium, such as helium, is supplied to the article support through the stem (see col. 4, lines 44-59). In view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Aruga et al. modified by Hongoh et al. as to further supply helium gas to the article support in order to provide means for improving heat conduction from the substrate to the cooled pedestal.

Aruga et al., Hongoh et al. and Turner et al. are applied as above but do not expressly disclose that the article support is supplied with a DC potential via the stem. Yamazaki et al. discloses an apparatus in which a DC potential can be supplied via the stem (see col. 7, lines 53-55). In view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Aruga et al. modified by Hongoh et al. and Turner et al. as to further supply a DC potential to the article support as an alternative voltage means in place of the RF as suggested by Yamazaki et al..

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aruga et al., EP 0 628 644 A2 in view of Hongoh et al., U.S. Patent 6,358,324 B1 as applied to claims 12-13, 15-17 and 19 above, and further in view of the Admitted Prior Art.

Aruga et al. and Hongoh et al. are applied as above but do not expressly disclose a partition extending from a top wall of the chamber body downward between the plural article supports. The admitted prior art discloses a processing chamber 12 having two processing regions 18 with a partition extending from a top wall of the chamber body downward between the plural article supports (see fig. 3 and its description). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Aruga et al. modified by Hongoh et al. as to comprise the claimed partition structure in order to isolate the two processing regions. It would have been obvious to one of ordinary skill in the art at the time the invention was made that by isolating the two processing regions contamination between the processing regions can be reduced.

### ***Response to Arguments***

Applicant's arguments filed 2/19/03 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to modify the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the knowledge

generally available to one of ordinary skill in the art suggests and provides the motivation to modify the references, since it is known in the art that by having an apparatus with the claimed structure a plurality of articles can be processed at the same time and therefore the processing time is reduced and the throughput of the apparatus is increased. For example, Luo et al. in WO 99/26277, clearly discloses that to enhance throughput and reduce redundancy of components in a commercial embodiment, dual wafer, dual plasma generation chamber configurations are used (see page 12, lines 17-20). Also, Kim in U.S. Patent 6,214,120 discloses that the throughput of dual chambers vacuum system can be significantly greater than that of the conventional single chamber system (see col. 1, lines 50-60).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, as stated above, the knowledge generally available to one of ordinary skill in the art suggests and provides the motivation to modify the references. For example, Luo et al. in WO 99/26277, clearly discloses that to enhance throughput and reduce redundancy of components in a commercial embodiment, dual wafer, dual plasma generation chamber configurations are used (see page 12, lines 17-20). Also,

Kim in U.S. Patent 6,214,120 discloses that the throughput of dual chambers vacuum system can be significantly greater than that of the conventional single chamber system (see col. 1, lines 50-60).

With respect to applicant's argument regarding the location of the pumping port, it should be noted that the references either singly or combined as above, disclose the pumping port beneath the article support. Therefore, if the article support is duplicated, the pumping port will also be located at least partially beneath the article supports since the pumping port is located at the lowermost portion of the chamber. Furthermore, Kim U.S. Patent 6,214,120, discloses that is known in the art that dual chambers compartments share different components including the vacuum pump in order to provide a small footprint (see col. 1, lines 53-60).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

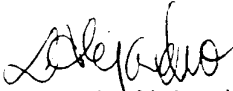
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-4545. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Luz L. Alejandro  
Primary Examiner  
Art Unit 1763

May 2, 2003